Section 6
Analytical Methods Summary

6.1 Conventional Parameters

Total suspended solids in surface water will be analyzed by EPA Method 160.2 or an equivalent method. Total organic carbon in sediment will be analyzed by EPA Method 9060 or an equivalent method. Fish tissue lipids will be measured using a gravimetric technique, using an aliquot of the sample extract.

6.2 Polychlorinated Biphenyls (PCBs)

PCBs will be analyzed by congeners and total PCBs where applicable. This means that the laboratory will be required to use a capillary-type GC column, which provides good resolution of most (if not all) individual PCB congeners, and to quantitate separately the PCB concentration associated with each GC peak. In most cases, each individual peak will represent a single congener. However, some peaks will represent coeluting congeners, usually no more than two or three. The laboratory will be required to resolve complex PCB mixtures into at least 117 peaks representing the congeners present in commonly used Aroclors, as well as their dechlorinated degradation products.

The purposes for using congener analysis, rather that Aroclor analysis, are to: (1) obtain lower detection limits for total PCBs; (2) obtain more reliable data on total PCBs, especially for biological samples; (3) provide data which are more suitable for use in assessments of PCB fate and transport, including the presence of any natural attenuation; and (4) provide the equivalent of a "fingerprint" with which to evaluate the possibility of alternate PCB sources within - or discharging to - the Kalamazoo River after remediation

There are currently no standard methods for PCB congener analysis, and thus the laboratories using this approach have commonly developed their own in-house protocol. In selecting a laboratory for the congener analyses, MDEQ/CDM will review the existing in-house method/protocols to insure they would produce data compatible with this program's goals. Some of the initial sample preparation steps, and some GC features, are expected to be similar to those specified in EPA's SW-846 ("Test Methods for Evaluating Solid Waste"), e.g., those under Method 8082: "Polychlorinated Biphenyls by Gas Chromatography." A typical process could involve initial extraction with methylene chloride (water matrix) or 1:1 hexane-acetone (sediment matrix) and sample cleanup (e.g., via sulfuric acid addition, florisil treatment and sulfur removal) prior to GC injection. The GC system may involve single or dual column operation, the latter used either for